

**WHAT IS CLAIMED IS:**

- 1        1. A system for determining mobile communications system carrier propagation  
2 characteristics, the system comprising:  
3            a frequency scanner to output a carrier signal corresponding to a carrier signal  
4 identifier, the frequency scanner being located at a geographical location;  
5            a signal strength measurement device coupled to the frequency scanner to  
6 determine a carrier strength indicator of the carrier signal;  
7            digital verification color code logic coupled to the frequency scanner to determine  
8 a digital verification color code of the carrier signal;  
9            a location determining unit coupled to the frequency scanner to determine a  
10 location identifier corresponding to the geographical location of the frequency scanner;  
11 and  
12            a memory coupled to the frequency scanner to store the carrier signal identifier,  
13 the carrier strength indicator, the digital verification color code of the carrier signal, and  
14 the location identifier.
- 1        2. The system of claim 1, wherein the signal strength measurement device is a radio  
2 signal strength indicator ("RSSI") determination unit.
- 1        3. The system of claim 1, wherein the location determining unit is a global  
2 positioning system ("GPS") unit.
- 1        4. The system of claim 1, wherein the location determining unit is a Loran unit.

1        5. The system of claim 1, wherein the memory stores the carrier signal identifier, the  
2 carrier strength indicator, the digital verification color code of the carrier signal, and the  
3 location identifier in a data record of a database.

1        6. The system of claim 1, wherein the system further includes a clock to output a  
2 time indicator.

1        7. The system of claim 6, wherein the memory stores the time indicator with the  
2 carrier signal identifier, the carrier strength indicator, the digital verification color code of  
3 the carrier signal, and the location identifier in a data record of a database.

1        8. The system of claim 1, further comprising a processor, wherein the memory stores  
2 a plurality of instructions adapted to be executed, the plurality of instructions including  
3 instructions to determine carrier propagation characteristics of the carrier signal based at  
4 least in part on one or more of the carrier signal identifier, the carrier strength indicator,  
5 the digital verification color code of the carrier signal, and the location identifier.

1        9. A system for determining mobile communications system carrier propagation  
2 characteristics, the system comprising:  
3            a plurality of cell sites in a portion of the mobile communications system, each  
4 cell site of the plurality of cell sites transmitting a carrier frequency, the carrier frequency  
5 transmitted by each cell site including a cell site identifier unique to the transmitting cell  
6 site of the portion of the mobile communications system;  
7            a frequency scanner to receive a plurality of carrier frequencies at a geographic  
8 location, each carrier frequency including a cell site identifier unique to the transmitting  
9 cell site of the portion of the mobile communications system;  
10           a signal strength measurer to output a received signal strength indicator of each  
11 carrier frequency;  
12           a signal identifier to output a cell site identifier of each carrier frequency; and  
13           a geographic location determination unit to output a location identifier of the  
14 geographic location of the frequency scanner.

1        10. The system of claim 9, further comprising a memory to receive for each carrier  
2 frequency a carrier frequency identifier, the received signal strength indicator, the cell  
3 site identifier, and the location identifier.

1        11. The system of claim 10, where the memory stores a plurality of data records, each  
2 data record of the plurality of data records including a carrier frequency identifier field, a  
3 received signal strength indicator field, a cell site identifier field, and a location identifier  
4 field.

1        12. The system of claim 10, further comprising a processor, wherein the memory  
2 stores a plurality of instructions adapted to be executed, the plurality of instructions  
3 including instructions to determine carrier propagation characteristics of each carrier  
4 frequency based at least in part on one or more of the respective carrier frequency  
5 identifier, the received signal strength indicator, the cell site identifier, and the location  
6 identifier.

1        13. The system of claim 9, wherein the cell site identifier comprises a digital color  
2 verification code and the signal identifier includes digital color verification code  
3 decoding logic.

1        14. The system of claim 9, wherein the cell site identifier comprises a Short  
2 Messaging Service ("SMS") cell site identifier code and the signal identifier includes  
3 SMS decoding logic.

1        15. The system of claim 9, wherein the geographic location determination unit  
2 includes a global positioning system ("GPS") unit.

1        16. The system of claim 9, wherein the geographic location determination unit  
2 includes a Loran unit.

1 17. A method for determining mobile communications system carrier propagation  
2 characteristics, the method comprising:  
3 receiving at a location a carrier signal from a transmitter of the mobile  
4 communications system, the mobile communications system operating in a standard  
5 operational mode;  
6 determining a strength indicator of the received carrier signal;  
7 identifying the source of the received carrier signal;  
8 determining a location identifier of the location; and  
9 storing a carrier signal identifier corresponding to the received carrier signal, the  
10 signal strength indicator, a source identifier corresponding to the identified source of the  
11 received carrier signal, and the location identifier.

1 18. The method of claim 17, wherein the carrier signal is a carrier signal of a control  
2 channel.

1 19. The method of claim 17, wherein the carrier signal is a carrier signal carrying  
2 subscriber communications.

1 20. The method of claim 17, wherein the carrier signal is not a test carrier.

1 21. The method of claim 17, wherein operating a mobile communications system in a  
2 standard operational mode includes not transmitting a test carrier.

22. The method of claim 21, wherein the test carrier is a keyed-up carrier that does not carry subscriber communications.

23. The method of claim 17, wherein determining the source of the received carrier  
signal includes decoding a digital verification color code of the received carrier.

1        24. The method of claim 17, wherein determining the source of the received carrier  
2 includes determining that the received carrier has a received signal strength that is at least  
3 approximately the same as a received carrier from a known source.

1        25. The method of claim 17, wherein determining the source of the received carrier  
2 includes determining that the received carrier has a received signal strength that is not at  
3 least approximately the same as a received carrier from a known source.

1        26. The method of claim 17, wherein determining the source of the received carrier  
2        includes decoding a Short Messaging Service message of the received carrier.

1        27. The method of claim 17, wherein determining the source of the received carrier  
2        includes determining the time delay of the received carrier.

1        28. The method of claim 17, further comprising determining carrier propagation  
2        characteristics of the received carrier signal based at least in part on one or more of the  
3        carrier signal identifier, the signal strength indicator, the source identifier, and the  
4        location identifier.

1        29. A method for determining mobile communications system carrier propagation  
2 characteristics, the method comprising:  
3            a step for receiving at a location a carrier signal from a transmitter of the mobile  
4 communications system, the mobile communications system operating in a standard  
5 operational mode;  
6            a step for determining a strength indicator of the received carrier signal;  
7            a step for identifying the source of the received carrier signal;  
8            a step for determining a location identifier of the location; and  
9            a step for storing a carrier signal identifier corresponding to the received carrier  
10 signal, the signal strength indicator, a source identifier corresponding to the identified  
11 source of the received carrier signal, and the location identifier.

1        30. The method of claim 29, wherein the carrier signal is not a test carrier.

1        31. The method of claim 29, wherein the carrier signal carries at least one of a control  
2 channel and a subscriber communications channel.

1        32. The method of claim 29, further comprising a step for determining carrier  
2 propagation characteristics of the received carrier signal based at least in part on one or  
3 more of the carrier signal identifier, the signal strength indicator, the source identifier,  
4 and the location identifier.





1        36. A system for determining mobile communications system carrier propagation  
2        characteristics, the system comprising:  
3                means for receiving at a location a carrier signal from a transmitter of the mobile  
4        communications system, the mobile communications system operating in a standard  
5        operational mode;  
6                means for determining a strength indicator of the received carrier signal;  
7                means for identifying the source of the received carrier signal;  
8                means for determining a location identifier of the location; and  
9                means for storing a carrier signal identifier corresponding to the received carrier  
10       signal, the signal strength indicator, a source identifier corresponding to the identified  
11       source of the received carrier signal, and the location identifier.

1        37. The system of claim 36, wherein the carrier signal is not a test carrier.

1        38. The system of claim 36, further comprising means for determining carrier  
2        propagation characteristics of the received carrier signal based at least in part on one or  
3        more of the carrier signal identifier, the signal strength indicator, the source identifier,  
4        and the location identifier.